WHAT IS CLAIMED IS:

1. A method of cryopreserving cells, comprising bringing the cells into contact with a cryopreservation composition containing at least one cyclohexanediol compound, and subsequently reducing the temperature of the cells to a cryopreservation temperature.

2. A method according to claim 1, wherein the at least one cyclohexanediol compound is selected from the group consisting of the cis or trans forms of 1,3-cyclohexanediol and 1,4-cyclohexanediol, and racemic mixtures thereof.

3. A method according to claim 1, wherein the cyclohexanediol compound is present in the cryopreservation composition in an amount of from 0.05 to 2.0 M.

4. A method according to claim 1, wherein the cryopreservation composition further contains at least one additional cryoprotectant compound.

5. A method according to claim 4, wherein the at least one additional cryoprotectant compound is selected from the group consisting of including acetamide, agarose, alginate, l-analine, albumin, ammonium acetate, butanediol, chondroitin sulfate, chloroform, choline, dextrans, diethylene glycol, dimethyl acetamide, dimethyl formamide, dimethyl sulfoxide (DMSO), erythritol, ethanol, ethylene glycol, formamide, glucose, glycerol, α-glycerophosphate, glycerol monoacetate, glycine, hydroxyethyl starch, inositol, lactose, magnesium chloride, magnesium sulfate, maltose, mannitol, mannose, methanol, methyl acetamide, methylformamide, methyl ureas, phenol, pluronic polyols, polyethylene glycol, polyvinylpyrrolidone, proline, propylene glycol, pyridine N-oxide, ribose, serine, sodium bromide, sodium chloride, sodium iodide, sodium nitrate, sodium sulfate, sorbitol, sucrose, trehalose, triethylene glycol, trimethylamine acetate, urea, valine and xylose.

6. A method according to claim 4, wherein the at least one additional cryoprotectant compound is present in the cryopreservation composition in an amount of from 0.1 to 10.0 M.

7. A method according to claim 1, wherein the cryopreservation composition further contains at least one anti-freeze protein.

8. A method according to claim 7, wherein the anti-freeze protein is present in the cryopreservation composition in an amount of from 0.01 to 1 mg/mL of the cryopreservation composition.

9. A method according to claim 4, wherein the cryopreservation composition further contains at least one anti-freeze protein.

10. A method according to claim 1, wherein the cryopreservation temperature is –20°C or less.

11. A cryopreservation composition comprising at least one cyclohexanediol compound and at least one additional cryoprotectant compound.

12. A cryopreservation composition according to claim 11, wherein the at least one cyclohexanediol compound is selected from the group consisting of the cis or trans forms of 1,3-cyclohexanediol and 1,4-cyclohexanediol, and racemic mixtures thereof.

13. A cryopreservation composition according to claim 11, wherein the cyclohexanediol compound is present in the cryopreservation composition in an amount of from 0.05 to 2.0 M.

14. A cryopreservation composition according to claim 11, wherein the at least one additional cryoprotectant compound is selected from the group consisting of acetamide, agarose, alginate, l-analine, albumin, ammonium acetate, butanediol, chondroitin sulfate, chloroform, choline, dextrans, diethylene glycol, dimethyl acetamide, dimethyl formamide, dimethyl sulfoxide (DMSO), erythritol, ethanol, ethylene glycol, formamide, glucose, glycerol, α-glycerophosphate, glycerol monoacetate, glycine, hydroxyethyl starch, inositol, lactose, magnesium chloride, magnesium sulfate, maltose, mannitol, mannose, methanol, methyl acetamide, methylformamide, methyl ureas, phenol, pluronic polyols, polyethylene glycol, polyvinylpyrrolidone, proline, propylene glycol, pyridine N-oxide, ribose, serine, sodium bromide, sodium chloride, sodium iodide, sodium nitrate, sodium sulfate, sorbitol, sucrose, trehalose, triethylene glycol, trimethylamine acetate, urea, valine and xylose.

15. A cryopreservation composition according to claim 11, wherein the at least one additional cryoprotectant compound is present in the cryopreservation composition in an amount of from 0.1 to 10.0 M.

16. A cryopreservation composition according to claim 11, wherein the cryopreservation composition further contains at least one anti-freeze protein.

17. A cryopreservation composition according to claim 16, wherein the anti-freeze protein is present in the cryopreservation composition in an amount of from 0.01 to 1 mg/mL of the cryopreservation composition.

18. A cryopreservation composition according to claim 11, wherein the cryopreservation composition further contains at least one anti-freeze glycoprotein.

19. A cryopreservation composition according to claim 18, wherein the anti-freeze glycoprotein is present in the cryopreservation composition in an amount of from 0.01 to 1 mg/mL of the cryopreservation composition.